

**Before the**  
**FEDERAL COMMUNICATIONS COMMISSION**  
**Washington, D.C. 20554**

In the Matter of	)	
	)	
Revitalization of the AM Radio Service	)	
	)	MB Docket No. 13-249
	)	
To: The Commission		

**REPLY COMMENTS OF VALCOM MANUFACTURING GROUP, INC.**

Valcom Manufacturing Group, Inc. ("Valcom"), pursuant to the FCC Rule Section 1.401, submits its Reply Comments to the above captioned Notice of Proposed Rule Making ("NPRM") wherein the FCC seeks to investigate possible changes to its rules which would allow AM broadcasters to better serve the public.

**Introduction**

Valcom was founded in 1955 and has since that time expanded to five different locations in Canada. The company specializes in the design and manufacturing of a full range of MF Beacon 100 kHz - 600 kHz, AM Broadcasting 540 - 1700 kHz, HF 1.8 - 30 MHz, VHF 30 - 300 MHz and UHF 300 - 1,200 MHz and SHF up to 6 GHz antennas. It is believed that the company's antenna system expertise and experience allow it to contribute valuable insight in the AM Improvement Proceeding in the area of AM antenna system efficiency. Valcom has previously submitted to the FCC detailed measurement data on its 75 foot and 85 foot whip antennas and associated standard ground system consisting of 120 equally spaced radials, 120 feet in length. This data allowed the FCC to release Public Notice DA 08-448 dated February 22, 2008. In that Public Notice the FCC announced simplified procedures for AM station construction permit applications which specify Valcom antennas. The 85 foot antenna was approved for use between 1200 and 1700 kHz and the 75 foot antenna between 1390 and 1700 kHz. These approvals are based on the fact that the Valcom antennas meet the FCC minimum efficiency standards for Class B and D AM

stations as specified in 73.189(b)(2)(ii). Valcom's 75 foot antenna has been approved for use by U.S. Class C stations based on FCC Figure 8, Section 73.190.

Section F. of the NPRM raises the possibility of modifying the FCC AM Antenna Efficiency Standards. Valcom's Reply Comments are directed to this portion of the NPRM.

### **Review of Filed Comments**

All of the Comments in the NPRM have been reviewed to determine the level of interest in the matter of AM antenna system efficiency changes. A list of the parties filing Comments on this aspect of AM station operation are listed in Appendix A. A total of one hundred and forty eight (148) entities specifically addressed the matter of AM antenna system efficiency in their Comments. This is a very significant number of comments suggesting a high level of interest in reducing AM antenna height and/or ground system requirements which would occur through a change in the FCC Rules to allow a reduction in the minimum antenna system efficiency standard.

### **Practical Implementation Considerations**

A standard vertical radiator, 54 degrees in electrical height, with a standard ground system consisting of 120 equally spaced radials 90 electrical degrees in length, has an FCC minimum efficiency of 282 mV/m@1kM for 1 kilowatt. At 1200 kHz, a 54 degree radiator has a height of 122.9 feet and the radials are 204.9 feet in length. This is a clear contrast to the Valcom 85 foot whip antenna which is 85 feet in height with a ground system radius of 120 feet.

Valcom believes that if the FCC implements a 25% decrease in its minimum efficiency requirement to 212 mV/m@ 1kM for 1 kilowatt that the Valcom 85 foot antenna would be usable down to 1050 kHz. Valcom also believes that its 85 foot antenna can function as an AM transmitting antenna as low as 900 kHz but that would require a reduction in the FCC minimum field strength efficiency requirements of more than 25% and possibly as much as 50% of the current value, or between 141 and 212 mV/m@1kM for 1 kilowatt. The limitation in performance is directly related to antenna system bandwidth as will be discussed below.

It is noted that the predictions of good antenna system performance at lower frequencies (shorter electrical length) are based on Valcom's standard ground system consisting of 120 equally spaced radials with a length of 120 feet. Valcom has experienced excellent performance of its antennas when mounted on a building roof. When the metal frame of a building, or cables running down the building and tied into the earth, is employed as a ground system, greater antenna system efficiency can be obtained. Valcom

encourages the FCC to consider simple and straightforward ways in which antenna system efficiency can be demonstrated for these type of non-standard implementations.

### **AM Broadcast Transmitter Load Requirements**

An inquiry of major transmitter manufacturers was made in an effort to understand what minimum bandwidth requirements are necessary for proper operation of currently manufactured AM transmitter products. The manufacturer responses are summarized below:

#### ***Geoffrey N. Mendenhall, P.E. on behalf of Harris Broadcast, now GatesAir.***

For analog-only AM operation, most modern, solid state, transmitters are rated up to a 1.5:1 VSWR before power fold-back. If the audio bandwidth is limited to 5 kHz, then a 1.3:1 VSWR at +/- 5 kHz, from carrier, would be reasonable for a narrow band antenna system. If the VSWR is pushing the limit, the symmetry of the VSWR (impedance variation) is important too.

For analog + IBOC hybrid mode or digital only mode, the requirement is more stringent at 1.2:1 VSWR @ +/- 5 kHz from carrier and 1.5:1 VSWR @ +/- 15 kHz from carrier.

If transmitter output power is not an issue, the addition of resistive components to the antenna system could help broaden the operating bandwidth.

#### ***Tim Hardy and Chuck Kelly on behalf of Nautel, Inc.***

IBOC Recommendations taken from Ron Rackley paper,  
VSWR should be less than:

1.4:1 at (plus and minus) 15 kHz

1.2:1 at 10 kHz

1.035:1 at 5 kHz

Additionally the upper and lower sidebands should have hermitian symmetry to a relatively tight specification.

For analog only AM operation, our opinion is that we could relax the requirement to 1.5:1 (with similar hermitian symmetry) at the highest audio frequency in use. Thus if only 5 kHz bandwidth is in use, the VSWR could be 1.5:1 at plus and minus 5 kHz, or if 10 kHz audio bandwidth is in use, the VSWR would be more tightly limited to 1.5:1 at plus and minus 10 kHz.



Higher VSWR levels are possible (2:1 at the band edge and higher) but it will become a science project at some point technically interesting but with cost and risk.

The guidelines above are in agreement for analog operation specifying a 1.5:1 VSWR at the upper modulating audio frequency with hermitian symmetry being of greater importance if the load is very close to the VSWR specification.

## **Conclusion**

We believe that the FCC's willingness to evaluate the matter of minimum antenna system efficiency is potentially beneficial to the industry in this age of increased difficulty in sitting AM antenna systems. Valcom looks forward to seeing a revised standard, which considers proper antenna system bandwidth, and the opportunity to provide the FCC with documentation on antenna systems which meet the lowered minimum efficiency requirements.

Respectfully submitted,

Valcom Manufacturing Group, Inc.

By:

A handwritten signature in blue ink, reading "Paul R. MacPherson", written over a horizontal line.

Paul R. MacPherson

President

March 19, 2014

## APPENDIX A

### LIST OF COMMENTORS

#### Reducing the FCC Minimum Efficiency Standard for AM Antenna Systems

Scott Clifton	Scott Communications, Inc. *	Blount Masscom, Inc. et al.
Edward DeHart	Alexander Broadcasting Co., LLC *	BDJ Radio Enterprises LLC
Doug Wilber	Alatron, Inc. *	920 AM LLC
Christopher J Gay	Alabama Media, LLC *	Anthony V Bono
Carl Como Tuteria	Radio Training Network, Inc. *	Alan Hughes
Dale W. Adkins	Mississippi Broadcasters, Inc. *	Bob Mark Allen Productions, Inc.
Lloyd Bankson Roach	COHEN, DIPPELL AND EVERIST, P.C	The Berkshire Broadcasting Corporation
Mariana Broadcasting, Inc	iBiquity Digital Corporation	S-R Broadcasting Company, Inc.
Logan Darensburg	Wright Broadcasting Systems, Inc	Just Because, Inc. - WGFP Radio
John S. Gilstrap	Word Power, Inc	_MonsterMedia, LLC
Mt Wilson FM Broadcasters, INC.	University of Northwestern - St. Paul	Larry Langford WGTO
MMTC	The Tuscarawas Broadcasting Company	John Wishon
DAIJ Media, LLC	The Association of Federal	Hatfield & Dawson Consulting Engineers, LLC
Carthage Broadcasting	Communications Consulting Engineers	Grant County Broadcasters, Inc
Carl T. Jones Corporation	TZ SAWYER TECHNICAL CONSULTANTS	Spring Arbor University
Butte Broadcasting Company, Inc	Stephen Zetsche	Sean Scallon
Broadcast Maximization Committee	Society of Broadcast Engineers, Inc.	R. Morgan Burrow Jr., P.E
Porter County Broadcasting Holding Corp LLC	Sellmeyer Engineering	N. Al Sergi
National Public Radio, Inc	Scott D. Fybush	Edward De La Hunt
National Association of Broadcasters	Sam Brown	Dana Puopolo
Minnesota Broadcasters Association	Roger Bouldin	North Carolina Central Broadcasters, Inc
Radio One Licenses, LLC *	Randy Gehman	Du Treil, Lundin & Rackley, Inc
Blue Chip Broadcasting Licenses, Ltd. *	Rama Communications, Inc	Robert Greenlee
Multicultural Radio Broadcasting Licensee LLC *	REC NETWORK	Joshua Lehan
Way Broadcasting Licensee, LLC *	Puerto Rico Broadcasters Association	Scott Todd
Sacred Heart University, Inc. *	Potomac Radio, LLC	Josh Johnson
Crossroads Communications LLC *	National Translator Association	Frederick R. Vobbe
CAAM Partnership LLC *	National Religious Broadcasters	Thomas G. Osenkowsky
WRNJ Radio, Inc. *	National Alliance of AM Broadcasters	The RAFTT Corporation
Renda Broadcasting Corp. *	Missouri Broadcasters Association	Pepin County Dept. of Human Services
St. Pier Group LLC *	Mike Wenglar (KULP AM)	Burt I. Weiner Associates
Southeastern Oklahoma Radio, LLC *	Mark D Humphrey	Martha Whitman
Jackson Radio, LLC *	Kyle Magrill	Douglas B Wilber
Metro Radio, Inc. *	Khanna & Guill, Inc.	Common Frequenc
Liberman Broadcasting, Inc. *	Kevin C. Kidd, CSRE/AMD	Cub Radio, Inc
Holladay Broadcasting of Louisiana, LLC *	KNAB, Inc.	School District of Durand
Florida Media, LLC *	Georgia-Carolina Radiocasting Companies	WRDN-1430AM
New South Radio, Inc. *	George M. Arroyo	WIFREDO G. BLANCO-PI, P.E.
Lighthouse Christian Broadcasting Corp. *	Foothills Broadcasting, Inc.	James B. Potter, et.al.
Great South Wireless LLC *	El Sol Broadcasting	Curtis W. Flick
Brantley Broadcast Associates, LLC *	Edward Henson Jr	Seehafer Broadcasting Corporation
Valleydale Broadcasting LLC *	Edward C. DeHart	Mark Heller
Wagon Wheel Broadcasting LLC *	Educational Media Foundation	City of Mondovi
Memphis First Ventures, LP *	David L. Hershberger	Brian J. Henry
RAMS	Curtis Media Group, Inc	Steven Chanin
Polnet Communications Ltd. *	Communications Technologies, Inc	Peter E. Schartel
Davidson Media Group *	Clear Channel Communications, Inc	Crawford Broadcasting Company
Gow Communications, LLC *	Cavell, Mertz & Associates, Inc.	Robert A Meuser
WLOH Radio Company *	CHARLES M. ANDERSON	
Siga Broadcasting Corporation *	Bryan Broadcasting Corporation	

\*All filed under the JOINT COMMENTS OF AM STATION OWNERS prepared by Wiley Rein LLP.